R5C5B-2

JAPAN · ECONOMIC · INSTITUTE

JEI REPORT

A Two-Part Report: A and B

NO. 33A August 24, 1990

OIL PRICES AND THE JAPANESE ECONOMY

Summary

Oil supply disruptions and price increases in the 1970s are seared on the memory of Japanese old enough to remember. The first oil shock in 1973 and 1974, in particular, seemed to embody a terrible nightmare of a small, resource-poor island nation cut off from essential industrial inputs. While that perception of Japan's vulnerability by no means has disappeared, both government officials and Japanese consumers, although worried about the prospect of war, have displayed surprising nonchalance at the prospect of substantially higher oil prices in the wake of the Iraqi invasion of Kuwait. While the best evidence is that Japan is less vulnerable than at the time of the two oil shocks of the 1970s, price increases matching those in the previous crises would have a measurable adverse effect on the economy. However, its current self-confidence puts Tokyo in a better economic and political position to join in international actions that could make such a run-up in oil prices less likely.

Japan's Dependence on Oil

As a modern industrial country Japan uses prodigious amounts of oil. Daily imports averaged 5 million barrels in 1989, a figure exceeded only by the United States, which imported 7.2 million barrels a day. In terms of use the Department of Energy reports that for 1987, the most recent year for which complete data are available, Japan accounted for 7.1 percent of world oil consumption against 26.9 percent for the United States. By this measure the Soviet

Union ranked second, using 14.3 percent.[1] But unlike the United States, which produces about half the oil it uses, or the Soviet Union, which is an exporter, Japan depended on foreign sources for 99.7 percent of its oil supplies in 1989.

By many measures, however, Japan's vulnerability to an oil cutoff or significantly higher oil prices has fallen dramatically in recent years. Although crude oil imports increased 6.6 percent in 1989, according to Ministry of Finance data, they still were 19.4 percent below the level of 1980 (see Table 1). A volume of oil imports lower than that of nearly a decade earlier is a substantial accomplishment given population growth and substantial increases in gross national product over this same period. The Bank of Japan has calculated that Japan used 27.5 percent less oil per unit of real GNP in 1985 than in 1980 and 4.9 percent less in 1989 than in 1985. The United States, in comparison, used 18.5 percent less over the earlier period and 4.2 percent less over the latter.[2] In other words, both the United States and Japan apparently have made substantial strides in conservation, with Japan doing significantly better early in the decade.

Table 1: Japan's Imports of Crude Oil, 1980-89

	Volume (millions of barrels)	Value (billions of dollars)	Dollars per Barrel	Yen per Kiloliter
1980	1,600	$52.8	$32.97	Y47,197
1981	1,431	53.3	37.29	51,387
1982	1,335	46.3	34.66	53,906
1983	1,302	40.1	30.77	45,923
1984	1,341	39.4	29.36	43,713
1985	1,232	34.6	28.07	42,374
1986	1,188	19.5	16.42	18,189
1987	1,162	20.7	17.79	16,328
1988	1,209	18.9	15.60	12,550
1989	1,289	21.5	16.72	14,453

Note: A barrel of crude oil equals approximately 6.29 kiloliters.

Source: Ministry of Finance

Japan managed to reduce its oil consumption during the 1970s and 1980s through both energy conservation and the substitution of other sources of

[1]Department of Energy, Energy Information Administration, International Energy Outlook 1990 (Washington, D.C.: Government Printing Office, 1990), pp. 34-35.

[2]Bank of Japan, Comparative Economic and Financial Statistics 1988, p. 189, and Comparative Economic and Financial Statistics 1990, p. 191.

The JEI REPORT (ISSN 0744-6489) is published weekly except for the New Year, Memorial Day, Labor Day, Thanksgiving and Christmas holiday weeks for $40 per year by the Japan Economic Institute of America, 1000 Connecticut Avenue, N.W., Washington, D.C. 20036. Second class postage paid at Washington, D.C. POSTMASTERS: Send address changes to JEI REPORT, 1000 Connecticut Avenue, N.W., Washington, D.C. 20036.

energy. Oil met 70.8 percent of Japan's energy requirements in fiscal 1970 (April 1970-March 1971) and 73.3 percent in FY 1975, but this figure fell to 65.8 percent in FY 1980 and to below 60 percent by the mid-1980s. In addition, energy use per unit of GNP also declined. Using a Bank of Japan index, energy consumed per unit of real GNP was 8.5 percent lower in 1980 than in 1978. The figure fell continuously during the early and mid-1980s and was 19.4 percent lower by 1987, the most recent year for which data are available.[3] Table 2 tells the story for more recent years. Oil's share of Japan's energy supplies has remained roughly constant, while overall energy use has risen. GNP, however, has grown even faster, with the result that real GNP produced per unit of energy used has increased. (For details of Japan's energy policies and information concerning the structure of energy demand, see JEI Report No. 40A, October 20, 1989.)

Table 2: Japan's Changing Energy Consumption, FY 1985-FY 1989

Fiscal Year	Energy Consumption*	Percent from Oil**	GNP per Million Kiloliters***
1985	293	56.7%	Y1.00
1986	294	56.8	1.03
1987	308	56.9	1.03
1988	325	57.3	1.03
1989	337	57.9	1.04

*Millions of kiloliters of crude oil equivalent.
**Oil consumption as share of all energy consumption measured in crude oil equivalent.
***GNP in 1980 prices.

Source: Ministry of International Trade and Industry

On the important question of diversification of sources, Japan narrowed its dependence on Middle Eastern crude from a high of 84.6 percent in 1970 to 68.6 percent in 1981, according to the Ministry of International Trade and Industry (see Table 3). In recent years this figure has hovered around 70 percent. (For details on Japan's overall political and economic relationships with the Middle East, see JEI Report No. 9A, March 4, 1988. For recent political and economic developments, see JEI Reports No. 31B, August 10, 1990, and No. 32B, August 17, 1990.)

Japan and the United States Compared

A comparison of crude oil imports underscores Japan's reasonably successful efforts at conservation vis-a-vis the United States. At the time of the second oil crisis in the 1979-80 period oil imports corresponded to a much higher percentage of Japan's economy than they did for the United States. But by 1989 the difference had disappeared almost entirely (see Figure). The plummeting price of oil during the late 1980s as indicated in Table 1 increased the

[3] Ibid., 1988, p. 170, and 1990, p. 176.

Table 3: Japan's Dependence on Middle East for Crude Oil, 1970-89

	Middle East Crude Imports (million barrels)	Share of Crude Imports	Top Crude Supplier	Share of Crude Imports
1970	1,049	84.6%	Iran	43.4%
1975	1,293	78.1	Saudi Arabia	29.8
1980	1,173	73.3	Saudi Arabia	35.3
1981	981	68.6	Saudi Arabia	37.6
1982	937	70.2	Saudi Arabia	39.7
1983	918	70.5	Saudi Arabia	33.3
1984	941	70.2	Saudi Arabia	32.0
1985	861	69.8	Saudi Arabia	23.3
1986	813	68.5	United Arab Emirates	22.1
1987	784	67.5	Saudi Arabia	22.0
1988	817	67.6	United Arab Emirates	20.2
1989	912	70.7	United Arab Emirates	20.4

Note: In this context the Middle East (literally, West Asia) includes Iran, Iraq, Bahrain, People's Republic of Yemen, Saudi Arabia, Kuwait, Qatar, Oman, Yemen, Israel, Jordan, Syria, Lebanon, United Arab Emirates, Gaza and Turkey. This definition does not necessarily correspond to the one used by the Japanese government for other purposes.

Source: Ministry of International Trade and Industry, Tsusho Hakusho (Trade White Paper), various years.

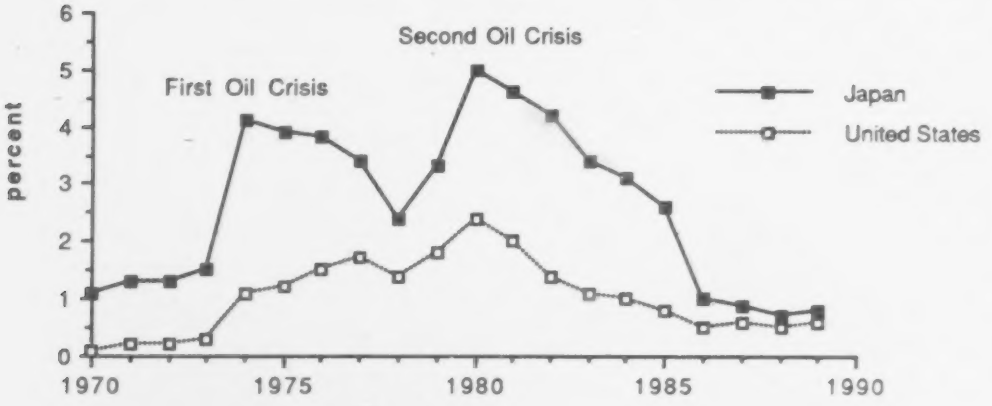
apparent (but not the real) effectiveness of conservation efforts in both countries.

The convergence of Japanese and American ratios regarding the role of imported oil in their economies is extremely important. Oil is an internationally traded, largely interchangeable, commodity. For this reason Japanese and American oil importers pay roughly the same price. A given percentage increase (or decrease) in this price will have virtually the same effect in both countries, other factors being equal. For example, if the price of oil were to double, absent exchange rate changes, the United States and Japan would face an increase in their foreign oil bill that would come to almost the same percentage of their respective GNPs. This result, in turn, suggests that American and Japanese policymakers would have to contend with comparable inflationary pressures and threats of reduced growth in the face of a run-up in international oil prices. Depending on where each country stood with respect to inflationary pressures and the threat of recession before the oil price increase, the perceived dangers could differ. Even though a hypothetical price hike might force both to trim GNP forecasts by 1 percentage point, a nation that had expected 4 percent economic growth may be less worried about the prospect of only a 3 percent rise than one that, instead of a 1 percent increase, would have to live with no growth at all.

Of course, adjustments in the United States would be quite different from those in Japan. This country would experience much larger internal income transfers. For any given oil price increase, U.S. oil producers would gain at

Dependence of Japan and United States on Imported Oil

(crude oil imports as percent of gross national product)



Note: U.S. 1989 figure is an estimate.

Sources: Department of Commerce, Economic Planning Agency and Ministry of Finance

the expense of oil consumers. Similarly, there could be regional transfers of real income from oil-consuming regions (New England) to producing areas (Texas and Alaska). Japan would not face such changes. In this sense Japan would have fewer economic and political dislocations.

In other respects the United States arguably would fare better than Japan. While the two nations import roughly the same amount of oil relative to GNP, the same is hardly true for all energy sources. The United States is a large coal exporter, Japan one of its largest customers. (Japan's coking and steam coal imports in 1989 were 27.2 percent in dollar terms of its crude oil imports, up substantially from 8.4 percent in 1980.) If, as has been true in the past, higher oil prices were to pull up coal prices, then Japan would transfer income to the United States and other coal exporters.

Other aspects of trade also may affect the United States and Japan in different ways. Countries that export oil affect world markets as buyers as well. Even should they decide to buy no goods or services with their windfall, their savings would enter world capital markets. These funds have gone largely to Europe and the United States in the past. According to the Bank of England, the United States attracted $14.5 billion of oil exporters' surpluses in 1989, mostly in the form of purchases of U.S. government securities. The United Kingdom had an inflow of $3.2 billion, mostly involving Eurocurrency bank deposits. Oil exporters withdrew a net $4.3 billion from the rest of the world, including Japan.

During previous run-ups in oil prices the capital flow originating in oil-exporting countries became known as petrodollars, which large international banks often ended up using for loans to developing countries. These loans, in turn, generated import demand, with the potential to benefit exporters in the United States, Japan and other countries. For example, in the 1973-82 period many of these funds went to Latin American countries, which tended to spend them in the United States. (Given the problems these loans have created for

the banks that made them, large-scale lending to Latin America is not likely to be repeated, but funds generated by oil exporters' current account surpluses will end up being spent by someone.)

Of course, oil exporters also make large purchases of goods and services abroad. As Table 4 shows, the United States and Europe have done much better selling goods to one critical region, the Middle East, than has Japan, especially when exports to that region are compared to imports.

Table 4: Middle East's Trade with Major Partners, 1980 and 1988

	1980	1988
Middle East Imports		
Exporting Country		
United States	11.2%	11.4%
West Germany	9.4	9.6
United Kingdom	7.3	9.1
Japan	13.1	9.0
Italy	6.0	5.4
France	5.6	4.3
Belgium and Luxembourg	2.0	3.3
Switzerland	2.3	3.1
Netherlands	2.6	2.5
Other Countries	40.5	42.3
Total	100.0	100.0
Middle East Exports		
Importing Country		
Japan	18.9%	17.8%
United States	10.1	12.0
Italy	5.7	4.5
West Germany	4.0	3.9
Singapore	3.2	3.7
Netherlands	5.4	3.6
France	8.9	3.5
United Kingdom	3.8	3.2
Brazil	3.9	3.0
Other Countries	36.1	44.8
Total	100.0	100.0

Source: Ministry of International Trade and Industry, Tsusho Hakusho (Trade White Paper), 1989 and 1990 from International Monetary Fund data.

Taken together, capital flows and trade patterns suggest that substantially higher oil prices could lead to increased demand for dollars to buy American goods and to invest in the United States, raising the value of the dollar against other currencies, particularly the yen. However, short-run policy measures by the United States and other industrial countries in response to higher oil prices could prevent such a development. In this respect the effects of oil price hikes on Japan are simpler: the direct impact of higher oil revenues on demand for Japanese exports is minimal.

The Macroeconomics of Scarce Oil

The export side of the equation suggests that the cloud of much higher oil prices could have a silver lining for the United States, despite its large appetite for imported oil. But the resultant storm could be a severe one for this country, as it would be for Japan. Despite recent declines oil still looms large in Western economies.

If the supply of oil is disrupted, prices either rise or they do not; either outcome is undesirable. If the price for some reason is not allowed to increase and thus reduce the quantity demanded to the now smaller amount supplied, then oil customers would face shortages. In such cases a firm or an individual willing to pay the going price is unable to obtain the product. Americans who waited in gas lines in the 1970s obviously were in this situation. Some businesses that are very productive users of oil may have to go without, even though they would be willing to pay very high prices. The supply capacity of the economy is reduced directly in this situation; a 20 percent drop in oil supplies may imply close to a 20 percent reduction in the output of products using oil since producers have no price incentive to seek other ways of making their product. In this sense an oil supply disruption would be somewhat like a widespread labor walkout.

If oil prices are allowed to rise, the adjustment process works a little more smoothly. Despite the almost universal pain, higher prices create an incentive to fund substitutes for refined oil products. Rather than berating the bureaucrat for doling out what inevitably would seem an unfair allocation, a manufacturer expends its efforts seeking substitute energy sources and/or less energy-intensive production processes; failing that, the company raises prices, which leads the consumer to make further substitution choices. Because substitution prospects are available, the shock to the production of national output is much less then if oil supplies are restricted. In other words, a recession is less likely. While gasoline prices may skyrocket, no one will have to spend time waiting in line.

Price adjustments minimize, but do not eliminate, the loss to potential GNP arising from an oil supply disruption. This reality led economists after the first oil shock to pay much more attention to a previously almost neglected aspect of macroeconomics: aggregate supply. Following a dramatic drop in supplies of a key commodity like oil, the aggregate supply concept suggests that, as in any other market, overall prices and aggregate output (GNP) will adjust. Prices could rise faster and output could decline as compared to a situation without a supply disruption. In other words, inflation and unemployment might both worsen.

Large oil importers like Japan face another potential complication: a deterioration in their terms of trade. Higher oil prices mean that the

domestic economy somehow will have to adjust to getting less on world markets for any given level of its exports. If oil prices double, for example, only six barrels of oil rather than 12 would trade for a Japanese-made videocassette recorder. (For a country like the United States with the potential for significant shipments to oil exporters, the terms of trade may not deteriorate.) If the big oil-importing country has limited means of increasing production, it can reduce domestic consumer spending in order to free up some output to pay for the more expensive oil. Alternatively, it may have to substitute domestically made products for some of its nonoil imports, reducing production of still other goods to accomplish this objective. Exactly what choices an economy makes to adjust to these problems is unclear, but it will end up poorer than if higher oil prices simply resulted in an internal redistribution of real incomes. For Japan this effect would be larger to the extent that the prices of other imported energy sources, such as coal, also would rise.

These arguments may be made another way. If the price of a major import like oil were to rise, then imports would tend to be higher in total. (The exception is the unlikely case where the oil price hike led to vigorous efforts to find substitutes, which might result in a smaller oil bill despite the price hike.) Higher imports imply (in Japan's case) a downward movement in the current account surplus. As a result, two reactions in international financial markets are possible. Faced with a suddenly higher demand for foreign currency relative to yen, the Japanese currency could depreciate to make Japanese exports cheaper and imports more expensive, this would lead to lower real consumer spending. Alternatively, if the exchange rate remained where it was, the capital outflow would be smaller, meaning that the acquisition of foreign assets -- and the eventual financial return on those assets -- would diminish. In short, some combination of a weakened currency and a smaller capital outflow would be the way Japan paid its higher foreign oil bill. This argument also suggests that Japan could be poorer as a result of higher oil prices regardless of how the steeper prices are accommodated.

Japan's Experience during the Two Oil Shocks

Adult Japanese, at least, need no instruction on the harm that apparently can come from an oil shock. During the 1973-74 oil shock and the one spanning 1979 and 1980 the Japanese economy suffered considerable dislocation. Some aspects of economic hardship not necessarily linked to oil were associated with the crises anyway. This version of causality may have stemmed from a deeply ingrained fear that Japan, as a small island nation, is particularly vulnerable to disruptions in the supply of imported natural resources.

First Oil Shock - The Middle East war in October 1973 set the stage for steep hikes in oil prices. In mid-October 1973 the Organization of Arab Petroleum Exporting Countries increased the price of a barrel of Arabian light crude from $3.01 to $5.12. At the start of 1974 the organization raised the benchmark again, this time to $11.65. It also announced reductions in oil shipments. Japan was slapped with a 10 percent cutback in October, which was increased to 25 percent in November. A scheduled cut to 30 percent for December was reduced prior to full implementation to 15 percent. Supply restrictions lasted until March 1974. During the same period the United States suffered greater cuts, and European nations' reductions generally were comparable to

Japan's.[4] On average the price Japan paid for oil jumped 31.1 percent in 1973 and another 228 percent in 1974.

In short order the Japanese economy went into a tailspin. As indicated in Table 5, Japan experienced a negative rate of inflation-adjusted GNP growth in 1974, with the first three months of 1974 registering a remarkable 3.1 percent decline from the previous quarter for an annualized rate of contraction of 11.7 percent. In addition, labor market conditions quickly worsened as measured by the ratio of job openings to people seeking employment; while in 1973 openings substantially exceeded applicants, two years later just the reverse was true. Finally, the rate of inflation soared in 1974. The Japanese economy that year combined its worst performance with the highest rate of inflation since the period immediately following World War II.

Table 5: Japanese Economic Indicators During Two Oil Shocks

	Oil (dollars per barrel*)	Real GNP Growth	Wholesale Prices	Job Opening Ratio	Money Supply Growth**
1972	$2.51	8.5%	0.8%	1.16	26.5%
1973	3.29	7.9	15.8	1.76	22.7
1974	10.79	-1.4	31.4	1.20	11.9
1975	11.86	2.7	3.0	0.61	13.1
1978	13.76	5.2	-2.6	0.56	11.7
1979	18.92	5.3	7.3	0.71	11.9
1980	32.97	4.3	17.8	0.75	9.2
1981	37.29	3.7	1.4	0.68	8.9

*Computed from customs-clearance trade statistics.
**M2+CDs.

Sources: Ministry of Finance, Economic Planning Agency, Bank of Japan and Management and Coordination Agency

Japan's external situation deteriorated as well. The yen dropped modestly in value against the dollar, falling from an average market value of Y271.7=$1.00 in 1973 to Y292.1 in 1974 and Y296.8 in 1975. Given the high rate of inflation, this may have amounted to a real appreciation. In any case the current account moved from a $6.6 billion surplus in 1972 to a small deficit in 1973; the following year the deficit swelled to $4.7 billion. The 1972 black-ink entry represented the largest surplus in Japan's postwar history up to that time, the 1974 figure the largest deficit.

[4]For details of this period, see Yuan-li Wu, Japan's Search For Oil (Stanford, California: Hoover Institution Press, 1977), especially pp. 3-8 and pp. 28-36; and Edward J. Lincoln, Japan: Facing Economic Maturity (Washington, D.C.: Brookings Institution, 1988), pp. 26-38.

At first blush the oil supply disruptions and the run-up in oil prices in the 1973-74 period would appear to be culpable for the economy's bad performance. However, many Japanese analysts accord substantial blame to an excessively easy monetary policy (indicated at least approximately in Table 5 by the growth in the money supply measure M2+CDs) and soaring government spending.[5] They argue that the money supply was growing rapidly even before the oil price shock and that inflation rates also were picking up. Whatever the merits of this argument, most Japanese and foreign experts regard the period as an important psychological turning point in Japanese economic history; 1973 often is regarded as the end of the postwar high growth era. Within a few years Japan, of course, did get over the oil shock. During the mid-1970s oil prices were relatively stable. Growth rates in Japan, however, did not return to the pace of the preshock days.

Second Oil Shock - In late 1978 the world oil market's attention again turned to the Middle East. The political upheaval in Iran in the autumn of that year noticeably tightened oil markets. In March 1979 the Organization of Petroleum Exporting Countries made matters worse from the standpoint of oil consumers by sanctioning the practice of additional levies on oil. In short, OPEC set its members free to raise prices. The resulting increase continued into 1980, with prices getting an extra boost from supply disruptions caused by the Iran-Iraq war, which began that year. The Department of Energy's index of real crude oil prices rose 271 percent between 1978 and its peak in 1981.

By most accounts the Japanese economy escaped with less damage this time around (see Table 5). Real GNP did not experience a single quarter of shrinkage between 1978 and 1981; in fact, growth exceeded 5 percent in both 1978 and 1979. Moreover, the job openings-applicant ratio, which had not really recovered after the first oil shock, did not lose any additional ground. Wholesale prices, which had declined 2.6 percent in 1978, jumped 7.3 percent in 1979 and another 17.8 percent in 1980 before falling back to a 1.4 percent rise in 1981. Retail prices, which had shown almost as big a jump as wholesale prices during the first oil crisis, rose much more moderately after the second shock. The peak, a 7.7 percent increase in 1980, was close to the 7.3 percent average annual rise between 1975 and 1978.

Japan's foreign trade was affected, of course. As oil prices rose the yen sank from an average of Y210.4 to the dollar in 1978 to a nadir of Y226.7=$1.00 in 1980. A measure of the real exchange rate calculated by the International Monetary Fund showed a 21.7 percent drop in the yen's value over the same two years. This depreciation, however, was not enough to prevent a sharp deterioration in the current account from a surplus of $16.5 billion in 1978 to deficits of $8.8 billion and $10.8 billion in 1979 and 1980, respectively. The 1980 figure, the largest current account deficit in dollar terms that Japan has ever recorded, came to 1.1 percent of GNP.

Several Japanese economists have pointed with some pride to Japan's apparently successful efforts to weather the second oil shock.[6] Japan's

[5]For a summary of this argument, references and a critical assessment, see Lincoln, op. cit., pp. 34-35.

[6]See, for example, Yoshio Suzuki, "Why Has the Performance of the Japanese Economy Been So Much Better?," Journal of Japanese Studies (Summer 1981), pp. 403-413.

experience in the 1979-80 period stands in apparent contrast not only to the trials it endured during the first oil crisis but to what the United States faced during the second one. Lengthy gas lines, soaring inflation and stagnant economic growth almost certainly were factors that led voters to reject President Carter's reelection bid in 1980.

Other analysts paint a more complicated picture of Japan's experience during this period. For example, the staff of the Organization for Economic Cooperation and Development found roughly equivalent adverse effects from oil prices on the Japanese economy in the two shocks. They calculated that the cumulative effect of higher oil prices over the 1973-74 and the 1979-80 periods trimmed real GNP by about 3 percent from levels that it otherwise would have reached. Furthermore, because the prices of internationally traded nonoil goods also moved against Japan more during the second shock, the overall adverse impact on the Japanese economy probably was greater during the 1979-1980 period. The OECD economists concluded in a 1980 report that the effect seemed smaller in part because it was spread out more evenly over the two years. Moreover, they found that the second shock resulted in less short-term dislocation because savings behavior, monetary and fiscal policies, inventory adjustment and investment behavior were more orderly.[7]

Impact of Higher Oil Prices on Japan in the 1990s

Japan's economy is, of course, much different today than even in 1980. As noted earlier, oil imports as a percentage of GNP are smaller now than before the 1979-80 run-up in prices. This suggests that the terms-of-trade effects from an oil price hike could be much less. In fact, with the United States and Japan now nearly equally dependent on imported oil by this measure, the effects should be about the same in the two countries. However, the jump in oil prices in July and August 1990, especially following Iraq's invasion of Kuwait and the subsequent embargo on Iraqi and Kuwaiti oil, has sent economists all over the world scurrying back to their computers to dust off simulations of the impact of a dramatic rise in energy prices.

Japanese analysts so far have assumed that oil prices will rise much less dramatically than they did in either of the oil crises of the 1970s. For example, the Economic Planning Agency estimated that if oil prices were to go up 10 percent, domestic Japanese prices would rise 0.3 point faster than otherwise. As another possible scenario, EPA considered the effect of $25-a-barrel oil, a figure reportedly advocated by Iraq at OPEC meetings in July. The result would be a 1 point rise in Japanese wholesale prices. Yen for yen, a given hike in oil prices now would deliver, in EPA's calculation, half the inflationary boost of the 1979-80 increases.

Estimating the impact on the current account, the Ministry of Finance figured that, if oil were to remain about $25 a barrel, Japan's surplus would decline by $10 billion or a little less than 20 percent from its 1989 level. MOF cautioned, however, that this improvement would bring little relief from trade frictions since the decline would not reflect any change in bilateral imbalances with the United States or Europe.

[7]Organization for Economic Cooperation and Development, Japan (Paris: 1980), pp. 50-64.

These calculations risk being overtaken by events. In early August the price of crude on international markets temporarily approached $30 a barrel. Nihon Keizai Shimbun published the results of a simulation using its own econometric model that considered the impact of the price of oil at a sustained level of $30 a barrel rather than $17 a barrel. In the October 1990-March 1991 period the effect would be to shave 0.2 percentage point off the real annualized GNP growth rate. The early August Nikkei report did not include estimated results for FY 1991, when the impact probably would be felt most keenly.

Even at $30 a barrel, however, oil is comparatively cheap compared to previous years. In real terms this price still would be lower than that of any year between 1980 and 1985, for example. In fact, between 1985 and 1988 the world enjoyed a sort of reverse oil shock as the price of crude dropped by more than 50 percent in dollar terms and even more in terms of the yen, which appreciated against the American currency (see Table 1). That most of these years were prosperous ones for Japan should come as no surprise in light of its apparently adverse experience from the oil price rises of the 1973-74 and the 1979-80 periods.

A 1988 OECD study of how the collapse in oil prices affected Japan between 1986 and 1988 found that the fall from a baseline level of $26.50 a barrel to $14 in 1986, $17 in 1987 and $18 in 1988 had a cumulative effect of making Japanese GNP 2.7 percent larger than it would be otherwise.[8] During the three years through June 1990 Japanese oil prices averaged $16.85, close to the $16.33 figure OECD used as the average for the 1966-88 period. Hence, running the numbers in reverse is not totally unreasonable. In other words, the low oil prices between 1987 and 1990 could be used as the baseline relative to a level of $26.50-a-barrel oil. This exercise suggests a substantial negative impact on the Japanese economy over a period of years.

Other Considerations

Structural changes in the Japanese economy no doubt would result in quite different responses to a rapid run-up in oil prices today, particularly if the higher levels were maintained, than happened during the two earlier oil shocks. Some would cushion the blow, but others could aggravate it. On the favorable side Japan's economy probably responds more to price signals than it did a decade ago. Many more interest rates are deregulated, for example. Within the petroleum industry some -- but not all -- nonprice means of allocating production and distribution among firms have been eliminated. This means that substitution possibilities are much greater than otherwise, reducing the potential shock to output.

Other differences have less clear-cut benefits. Press reports in Japan and the United States have emphasized the role of special petroleum reserves in both countries. In Japan's case both the private and the public sector control reserves, with the government probably having decisive influence over the use of the private reserves. As of early August private reserves totaled 322 million barrels, an estimated 88-day supply; public stores of 197 million barrels or 54 days yielded a total reserve of 519 million barrels -- a 142-day supply.

[8]Organization for Economic Cooperation and Development, Japan 1987/1988 (Paris: 1988), p. 53.

(The reserves were established on the basis of a 1975 law; actual development began in 1978, just before the second oil crisis. The reserves, however, were not tapped at that time.)

Since oil prices are set on global markets oil reserves would affect prices only insofar as they affect global supply -- unless countries holding reserves adopt policies to sever the linkage between domestic and international prices. Even then, the terms-of-trade effect, which depends on the price nations pay on international markets, would not be significantly offset. In most cases only a widespread -- and probably internationally coordinated -- release of reserves by Japan, the United States and others would have a significant effect on Japan's and this country's ability to cope with a large supply disruption. Hence, the relevant figure is international oil reserves. The International Energy Agency, an organization of wealthy oil-consuming nations, has estimated that July 1990 worldwide reserves were 3.4 billon barrels, or a supply of about 98 days. Japan's reserves would appear to equal about 15 percent of the total.

The structure of financial markets is another complicating factor. They are much larger and more complex than they were even in 1979 and 1980. For example, according to many analysts, outbound capital flows became substantially easier as a result of the 1980 revision of Japan's Foreign Exchange and Foreign Trade Control Law. In a sense the larger movement of capital overseas is a safety valve for the Japanese economy; reductions in the outbound capital flow would be one way to handle a larger import bill. However, should a future oil crisis create, as it has in the past, an image of the United States as a safe haven, outbound capital flows from Japan could surge. To accommodate the larger capital flow, the current account surplus would have to end up larger -- not smaller as implied by the larger oil bill. This implies a larger adjustment problem than would exist in the absence of relatively free capital flows. Concretely, it could mean a surge in Japanese exports.

The now huge Japanese stock market represents a further complication. Some analysts contend that a "wealth effect" was a major factor in sustaining Japan's boom between 1986 and 1989. Should higher oil prices or another international crisis pull down stock prices significantly for a prolonged period, some investors would feel less wealthy and therefore reduce their spending. If a reverse wealth effect materialized, it could complicate the already difficult macroeconomic policy choices needed in such an environment.

If oil prices were to rise substantially over the next year or so, Tokyo and Washington would face a tricky task of policy coordination. The Federal Reserve Board might be tempted to loosen the money supply to avoid the recession that was widely expected even before the prospect of more expensive oil. Since the Japanese economy appears far stronger at the moment the Bank of Japan probably would see its job as tightening monetary policy significantly to reduce the inflationary pressures arising from such a hypothetical oil price increase. If the Fed and BOJ were to take this combination of actions, interest rate differentials, which have been uncharacteristically microscopic in recent months, might disappear completely. This development would have unpredictable consequences for the dollar, which has been sustained in part by higher interest rates in the United States.

Conclusion

Oil shocks -- as much as the reasons causing them -- present policymakers with a dilemma. If they ease monetary and fiscal policies, they risk aggravating already serious inflationary trends. If they tighten the supply of money and cut government spending or raise taxes, they may be blamed for increasing unemployment or reducing the rate of economic growth. In both oil crises of the 1970s, Japanese policymakers tended to risk slower or even negative economic growth by pursuing the second option. As of August 1990 the Bank of Japan widely was believed to be leaning toward a tighter monetary policy even in the absence of a run-up in oil prices; more expensive oil would strengthen that resolve.

Japanese policy depends in part on what happens in the United States. Not only is the American market still an important one for Japanese exporters, but capital markets in the two countries are linked closely. Hence, a recession in the United States, whether or not it was oil-related, could reduce the demand for Japanese goods and have a measurable negative impact on Japan's economy. However, an expansionary U.S. fiscal policy stance -- which is not improbable considering the U.S. military buildup in the Middle East, the possibility of conflict and inattention to cutting the federal budget deficit -- could boost demand for Japanese goods in this country.

Given its dependence on foreign oil and other imported energy resources, a future run-up in world petroleum prices would have an adverse effect on Japan. Such increases could present Japan with some difficult policy choices to limit that damage. Of course, Washington would hope that Tokyo does not try to minimize the dislocation at America's expense. Japan's relative self-confidence in the past few years makes it more willing to take actions that result in some short-term pain for itself; it realizes that higher oil prices need not be devastating for the economy. For example, Japan may be willing to live with the higher oil prices that follow in the wake of an embargo against Iraqi and Kuwaiti oil because it realizes that in the long run preventing Iraq from getting control of OPEC would help keep oil prices low.

As a more important player in the international economy than in 1973 or even 1980, Japan may be aware that it receives a proportionately larger part of the benefits from any positive role it takes in international economic actions to enhance the common good of oil-consuming nations. Hence, Tokyo may be more willing to take such actions. This larger role also implies that its policies receive more international scrutiny -- with the risk of severe criticism -- than during the first and the second oil crises. In August 1990, as the threat of a third oil shock seems more real than at any time in recent memory, Japan's economic self-confidence is apparent. The political leadership in Washington and in other world capitals is hopeful that this confidence will find reflection in Tokyo's international economic policies.

For further information, contact Douglas Ostrom.

Margit McGrath provided research assistance.

* * * * * *

The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.